IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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U.S. Serial No: 09/ 608,474 Group Art Unit: 2124

Filing Date: 30 June 2000 Examiner: Chat C. Do

Title: "CONTROL OF LOW FREQUENCY NOISE FLOOR IN UPSAMPLING"

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Clean Version Of Claims

1. A method for adjusting a noise floor of a filtered signal for low frequencies, the method comprising:

providing a digital signal, having M bits, that has been digitally filtered, where M is a selected positive number;

forming an EXclusive OR product of N LSB bits of the M-bit filtered signal, to provide a one-bit supplement signal, where N is a selected positive number satisfying $N+1 \leq M$;

adding the supplement signal to the M-bit filtered signal to produce a modified filtered signal; and

removing L LSB bits from the modified filtered signal to produce a dithered, filtered signal, where L is a selected positive number satisfying $L+1 \leq M$.

2. The method of claim 1, further comprising choosing said integer $M = 30$.

3. The method of claim 1, further comprising choosing said integer $N = 16$.

4. The method of claim 1, further comprising choosing said integer L in a range $1 \leq L \leq 16$.

5. The method of claim 1, further comprising providing said filtered signal as an FIR-filtered signal.

6. A system for adjusting a noise floor of a filtered signal for low frequencies, the system comprising a computer that is programmed:

to provide a digital signal, having M bits, that has been digitally filtered, where M is a selected positive number;

to form an EXclusive OR product of N LSB bits of the M-bit filtered signal, to provide a one-bit supplement signal, where N is a selected positive number satisfying $N+1 \leq M$;

to add the supplement signal to the M-bit filtered signal to produce a modified filtered signal; and

to remove L LSB bits from the modified filtered signal to produce a dithered, filtered signal, where L is a selected positive number satisfying $L+1 \leq M$.

7. The system of claim 6, wherein said computer is further programmed to choose said integer $M = 30$.

8. The system of claim 6, wherein said computer is further programmed to choose said integer $N = 16$.

9. The system of claim 6, wherein said computer is further programmed to choose said integer L to lie in a range $1 \leq L \leq 16$.

10. The system of claim 6, wherein said computer is further programmed to provide said filtered signal as an FIR-filtered signal.

11. An article of manufacture comprising:

a computer usable medium having computer readable program code means embodied in the medium;

computer readable program code means for causing a computer to provide a digital signal, having M bits, that has been digitally filtered, where M is a selected positive number;

computer readable program code means for causing a computer to form an EXclusive OR product of N LSB bits of the M-bit filtered signal, to provide a one-bit supplement signal, where N is a selected positive number satisfying $N+1 \leq M$;

computer readable program code means for causing a computer to add the supplement signal to the M-bit filtered signal to produce a modified filtered signal; and

computer readable program code means for causing a computer to remove L LSB bits from the modified filtered signal to produce a dithered, filtered signal, where L is a selected positive number satisfying $L+1 \leq M$.

12. The article of manufacture of claim 11, wherein at least one of said computer readable program code means chooses said integer $M = 30$.

13. The article of manufacture of claim 11, wherein at least one of said computer readable program code means chooses said integer $N = 16$.

14. The article of manufacture of claim 11, wherein at least one of said computer readable program code means chooses said integer L in a range $1 \leq L \leq 16$.

15. The article of manufacture of claim 11, wherein at least one of said computer readable program code means provides said filtered signal as an FIR-filtered signal.